Overweight and Obesity Prevalence among Children Ages 2 through 4 Years

Enrolled in the Colorado WIC Program* During 2016

New methodology: In 2010, the Centers for Disease Control and Prevention (CDC) announced they would no longer produce the PedNSS (Pediatric Nutrition Surveillance System) reports. CDC published the last PedNSS results for 2011. Since 2012 states conduct their own analysis on their data. Pediatric overweight/obese data elements are the most essential PedNSS had reported. CDC created an analysis methodology to obtain pediatric overweight/obese data that use a specific data set collected by all state WIC Programs, the WIC Participant and Program Characteristics (WIC PC) file. States have the option to use this methodology to produce their state-specific pediatric overweight/obese data.

During the summer of 2012, the Colorado WIC Program used CDC's analysis methodology to analyze its 2012 PC file to assess the prevalence of overweight and obese children ages 2 through 4 years. The 2012 Colorado WIC PC file includes all actively enrolled participants in the WIC data base during the month of April 2012. This methodology is called "point prevalence methodology" and differs from past methodologies CDC produced. It contains actual height and weight measurements of children enrolled in the Colorado WIC Program during one month only. It does not contain the entire number of children participating in WIC over a one year time period (as previously presented in PedNSS). Hence, the number of children with biologically plausible data (data that are assumed accurate and consistent with what makes sense biologically) to analyze from 2012 is smaller than the number from past PedNSS estimates.** Because of this new analysis methodology, the prevalence of overweight and obesity among children ages 2 through 4 years receiving WIC services from the WIC PC file are not directly comparable to past PedNSS prevalence estimates.

Point prevalence methodology will be used to generate overweight and obese prevalence estimates in 2012 and beyond. It is recommended that the 2012 WIC PC estimates serve as a new baseline for monitoring trends in future years. The **2012 - 2015 Pediatric Overweight/Obese Data** can be found on the Colorado Department of Public Health and Environment's Women, Infants, and Children webpage under WIC Reports: https://www.colorado.gov/cdphe/wic-reports.

2016 State Prevalence: Based on the new point prevalence methodology, the 2016 state prevalence of overweight and obesity among Colorado WIC Program participants ages 2 through 4 years is shown in Table 1. The prevalence estimate is reported along with its corresponding confidence interval (refer to the description about confidence intervals below). In 2016, 13.3 percent of low income children ages 2 through 4 years in Colorado were overweight, 7.0 percent were obese, and 20.3 percent were overweight or obese.

*The Colorado Special Supplemental Nutrition Program for Women, Infants, and Children is commonly referred to as the Colorado WIC Program.

**The 2011 PedNSS data represented a partial sample as Colorado WIC changed its program software. During data collection in 2011, some agencies were oversampled thus contributing to a temporary rise in the overweight and obesity rates.

Table 1. Prevalence of overweight and obesity among children ages 2 through 4 years enrolled in the Colorado WIC Program (N = 29,657), during April 2016

	N	Overweight 85th-<95th percentile^ % (95% CI)	Obese >=95th percentile^ % (95% CI)	Overweight or Obese >=85th percentile^ % (95% CI)
Colorado	29,657	13.3 (12.9 – 13.7)	7.0 (6.7 - 7.3)	20.3 (19.8 - 20.7)

CI: Confidence Interval
^Based on 2000 CDC growth chart percentiles for BMI-for-age for children 2 years of age and older.
Data Source: 2016 WIC Participant and Program Characteristics (Colorado WIC PC) file

Note that the total number of children ages 2 through 4 years available for analysis after exclusions of implausible records was 29,657. This sample size is smaller than the sample sizes analyzed in the past by the PedNSS. The decreased sample size results in increased variability in estimates, which is why it becomes important to look at the confidence intervals, especially when making comparisons. It should be noted that prevalence estimates are suppressed for counties, agencies, and clinics with a sample size less than 100.

NEW 2016 State Prevalence by Race/Ethnicity: Based on the new point prevalence methodology, the 2016 state prevalence of overweight and obesity among Colorado WIC Program participants ages 2 through 4 years by race/ethnicity is shown in Table 2. The prevalence estimate is reported along with its corresponding confidence interval (refer to the description about confidence intervals below).

Table 2. Prevalence of overweight and obesity among children ages 2 through 4 years enrolled in the Colorado WIC Program (N = 29,657) by race/ethnicity, during April 2016

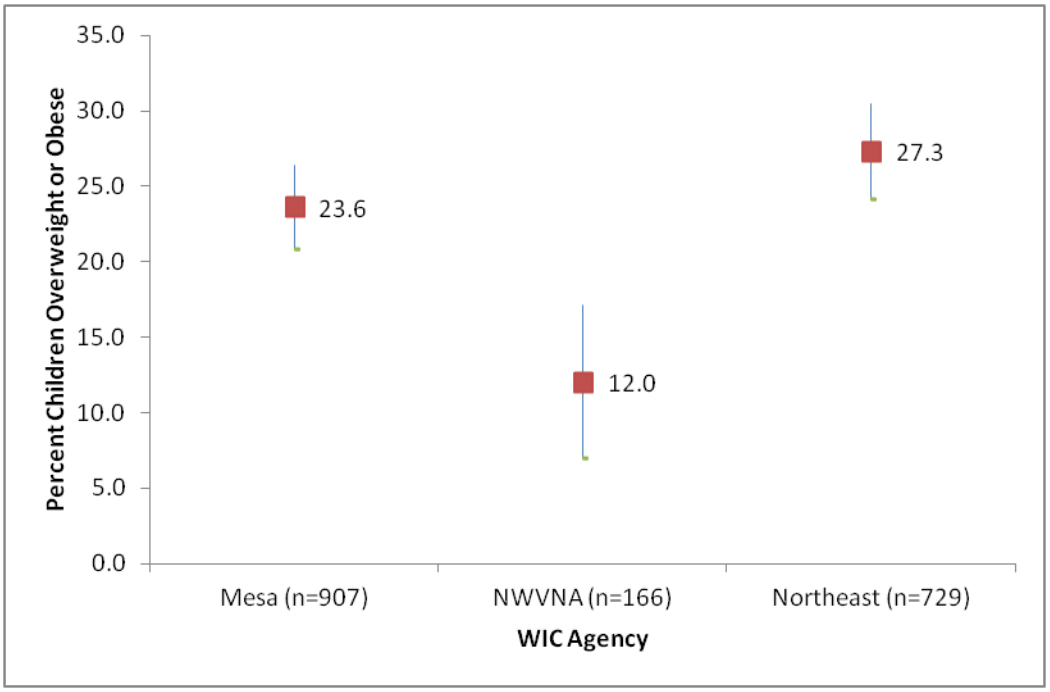
	N	Overweight 85th-<95th percentile^ % (95% CI)	Obese >=95th percentile^ % (95% CI)	Overweight or Obese >=85th percentile^ % (95% CI)
White, Non-Hispanic	8,910	12.4 (11.8-13.1)	5.3 (4.9-5.8)	17.8 (17.0-18.6)
Black, Non-Hispanic	2,125	11.2 (9.9-12.6)	4.9 (4.0-5.8)	16.1 (14.6-17.7)
Hispanic	16,650	14.4 (13.8-14.9)	8.2 (7.8-8.6)	22.6 (22.0-23.2)
American Indian/Alaska Native, NH	337	9.8 (6.6-13.0)	9.5 (6.3-12.6)	19.3 (15.1-23.5)
Asian/Pacific Islander, NH	945	9.5 (7.6-11.4)	5.2 (3.8-6.6)	14.7 (12.4-17.0)
Multiple Races/Other, NH	690	12.3 (9.9-14.8)	5.2 (3.6-6.9)	17.5 (14.7-20.4)

CI: Confidence Interval
^Based on 2000 CDC growth chart percentiles for BMI-for-age for children 2 years of age and older.
NH: Non-Hispanic
Data Source: 2016 WIC Participant and Program Characteristics (Colorado WIC PC) file

Confidence Intervals (CI): Confidence intervals are used to describe the possible margin of error of an estimated prevalence or rate. This report provides 95 percent confidence intervals. A 95 percent confidence interval indicates that 95 out of 100 times, the “true” prevalence value will be contained between the upper and lower limits of that confidence interval. Confidence intervals are directly affected by sample size. If the sample size is small, the confidence interval will likely be wide. Conversely, if the sample size is large, the confidence interval will likely be narrow. Confidence intervals are important for understanding if differences are statistically significant.

The CI Example below shows the prevalence of overweight or obese children for three WIC agencies. The prevalence estimate is indicated by the red marker and the confidence interval is indicated by the blue line. Northwest Colorado Visiting Nurse Association (NWVNA) has the longest line and the smallest sample size, while Mesa has the shortest line and the largest sample size. The lines for Mesa and NWVNA and the lines for NWVNA and Northeast do not overlap, so the prevalence estimates are statistically significantly different. In other words, the prevalence of overweight or obese children ages 2 through 4 years in NWVNA is statistically lower compared to Mesa and compared to Northeast. When comparing prevalence estimates for Mesa and Northeast, the blue lines (or confidence intervals) do overlap signifying that there is no statistical difference between the two agency estimates.

CI Example: Prevalence of overweight or obese children ages 2 through 4 years enrolled in the Colorado WIC Program by select WIC agencies, 2016



Data Interpretation: Due to changes in methodology, these are a few things that cannot and can be done with these new estimates.

Cannot:

- Compare 2012 and later Colorado WIC PC file estimates to the Colorado PedNSS estimates from 2011 and earlier.
- Compare Colorado WIC PC data to other states' PedNSS data.

Can:

- Use the 2012 estimates as the new baseline for overweight and obese children ages 2 through 4. Use post-2012 estimates when available to track trends.
- Compare data within the same year to other agencies, clinics, counties, and the state.

- Compare with future data when available – make sure to check the confidence interval overlap when making comparisons by year.

The following pages indicate the prevalence of overweight and obesity among children ages 2 through 4 years in 2016 by local WIC agency (Table 2), WIC clinic (Table 3), and county of WIC clinic (Table 4) along with their respective confidence intervals.

Note to Users of these Data: Use the data as you monitor efforts to achieve healthy weight among the children you serve in your agency. It is helpful to look at the prevalence of overweight and obesity together because the sum of these values tells a much broader story of the burden among the population being served. Remember that although the 2016 data are valid, WIC PC overweight and obese estimates are not comparable to PedNSS overweight and obese estimates.

Other partner programs within your broader agencies or external organizations may also find the data to be a useful surveillance tool as programmatic efforts targeting the health of children in early childhood emerge. Specifically, local WIC agencies can use the data to monitor progress related to early childhood obesity prevention nutrition education plans.

The data are posted on the Colorado WIC Program's web site. Click "Local agencies", then "Early childhood obesity prevention ", then "Colorado early childhood obesity data reports".